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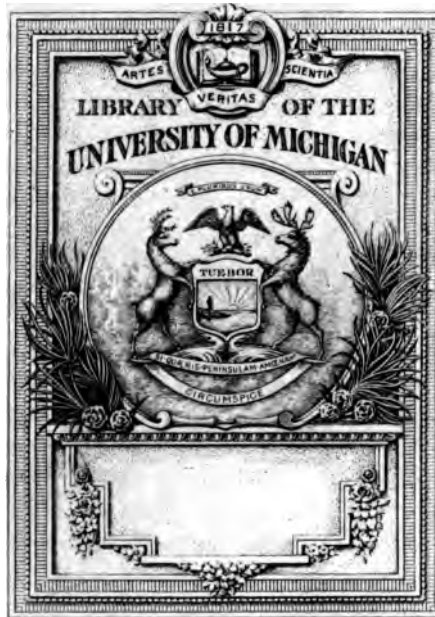
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SOME COMMENTS
ON
THE 1907 ANNUAL REPORT
OF
AMERICAN TELEPHONE AND
TELEGRAPH COMPANY



PUBLISHED BY THE
INTERNATIONAL INDEPENDENT TELEPHONE ASSOCIATION
CHICAGO

SEPTEMBER, 1908



SOME COMMENTS

ON

THE 1907 ANNUAL REPORT

OF

**AMERICAN TELEPHONE AND
TELEGRAPH COMPANY**



GANSEY R. JOHNSTON
General Manager
The Columbus Citizens Telephone Company

PUBLISHED BY THE
INTERNATIONAL INDEPENDENT TELEPHONE ASSOCIATION
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SOME COMMENTS ON 1907 REPORT OF THE AMERICAN TELEPHONE AND TELEGRAPH COMPANY

The 1907 annual report of the Directors of the American Telephone and Telegraph Company, which is the controlling company of the Bell telephone interests, contains remarks with reference to Independent telephone companies, their promotion and competition, and with reference to public control. Certain extracts from the report are reproduced below. If these remarks have any bearing upon the future of the business, they display the belief of the Bell interests that the monopolistic condition of the telephone business is the proper one, and that the purpose of those interests is to re-establish such monopoly—presumably with themselves in power, although subject possibly to public control. Acquaintance with the business since its original opening to competition after the expiration of the Bell patents in 1894 brings many evidences of their continued purpose in this direction, and of the recent strengthening of that purpose as the competition has become more and more effective.

The object of this paper is to show that the competitive condition of the telephone industry is now, and so far as we can see into the future, the proper condition, and that no more of municipal, state, or other form of public control is needed than is necessary to prevent fraud or exorbitant charges.

Extracts From the A. T. & T. Report.

Promotion and Competition—Independent Companies.

The unusual production and prices, during the past few years, of those commodities which this country sells to the whole world, with accompanying very general distribution of wealth, resulted in an almost phenomenal financial and industrial activity, stimulating new enterprises and promotions of all kinds, among them independent telephone companies.

The exaggerated stories of the fortunes made by original telephone investors, together with misleading statement of probable profits, made it possible to launch many of these companies pledged to *low rates for exchange service and high dividends to investors*. At these low rates, with "maintenance" and "reconstruction" expenses either intentionally or ignorantly disregarded, these companies for a time had an appearance of prosperity.

The result has been unfortunate in nearly every case. The promises and pledges as to rates and profits, made as an excuse for their coming, as a

basis for their franchise, and as an incentive to attract capital, are now admitted to be impossible. Most, if not all, of these companies, which have had an existence long enough to force attention to the items of "maintenance" or "reconstruction," are now asking for increased rates, and to be absolved from onerous conditions freely accepted and assumed at the beginning. Reorganizations are now in progress.

It would seem, as a whole, that the gain of the public through competition based on low rates has not compensated for the loss of capital invested in these enterprises.

During this period of strife and rush for development and extension, many subscribers were connected to exchange systems with little or no benefit to themselves or advantage to others, and much was done that under ordinary conditions would not have been done.

Competition.

The value of any exchange system is measured by the number of the members of any community that are connected with it. If there are two systems, neither of them serving all, important users must be connected with both systems. Connection with only one is of but partial value and cannot be satisfactory. Two exchange systems in the same community, each serving the same members, cannot be conceived of as a permanency, nor can the service in either be furnished at any material reduction because of the competition, if return on investment and proper maintenance are taken into account. Duplication of plant is a waste to the investor. Duplication of charges is a waste to the user.

The advantages claimed for competition are lower rates and improved service. Exhaustive competition may temporarily produce either or both of these results, but, as before stated, this temporary gain is purchased by an excessive waste. Duplication of plant and operation cannot produce either result without exhaustive competition. Given the same management, the public must pay double rates for service, to meet double charges, on double capital, double operating expenses and double maintenance. In most cases of proposed competition an examination of the prospectus will show that, by some process, it is expected to make good a capitalization equal to at least two or three times the actual cost of the construction. The only benefits are to the promoter.

Public Control.

It is contended that if there is to be no competition, there should be public control.

It is not believed that there is any serious objection to such control, provided it is independent, intelligent, considerate, thorough and just, recognizing, as does the Interstate Commerce Commission in its report recently issued, that capital is entitled to its fair return, and good management or enterprise to its reward.

Independent Companies Not So Black as Painted.

In this writing, I will not undertake to gather and publish data refuting the insinuations and allegations of improper promotion (as distinguished from "good management or enterprise") of Independent telephone com-

panies on any considerable scale. The A. T. & T. general statements in the first paragraph quoted may be met by general denial. The observation of those in the business and of those who have enjoyed their service is to the effect that Independent telephone companies, while not uniquely free from inflated values, flimsy construction, and sales to unwary investors, have not been burdened by these to any notable degree. There has been no general admission by Independent telephone companies of non-excuse for being.

One Bell Claim Inconsistent With the Purpose of its Argument.

It is suggested that the promoter in most cases obtains benefits from expecting to make good a capitalization equal to at least two or three times the actual cost of construction. *Fraudulent* promotion finds no more defenders among Independent than among Bell telephone men. If any Independent telephone capitalization is good—and the Bell people have never shown that more Independent than Bell capitalization has been bad—and if it is made good in these proportions by rates lower than Bell rates, what is the inference concerning those Bell rates now and before reduction, or what becomes of the “disregarded maintenance” argument? If a company can make good a capitalization three times the value of its physical plant it can surely make that plant good.

Why Rates Increase.

That some of the many Independent telephone companies, after years of operation, have sought to increase their rates, and have even admitted an increase in rates to be necessary to their solvency, is not evidence that the rates at first were too low or the early years on a shaky financial foundation. Causes have arisen requiring a higher level of charges than were necessary when the plants were installed. Among these have been higher prices of material and labor, losses due to abandonment of equipment rendered obsolete by the progress of invention, and the increased cost growing out of the multiplication of telephones.

As lines are added to a telephone plant, the cost of construction, maintenance and operation of each new and of each old line tends to increase because of the addition. The construction cost of the new lines averages greater because the average length of line increases with the growth of the plant. The construction cost of the switchboard connections for both the old and the new lines increases because facilities must be provided at the switchboard to connect each line, old and new, with every other line, as well as extra facilities for the additional traffic. The unit of operation cost increases because, as new connections are provided, there is additional use of each line. For example, each subscriber on a 2000-line plant uses his line for such business as he has occasion to do with those two thousand, and

for the entire subscription list (without taking into account more than one person for each line) the possible demand for connections is limited to the square of 2000 less 2000, or 3,998,000. If the plant is doubled, each of the original two thousand has his original outgoing and incoming calls plus what he has with the additional subscribers, and in like manner do the new ones have more than did the old. The limit of demand in this case on the same basis is measured by the square of 4000 less 4000, or 15,996,000. If the plant is trebled, then the limit of the demand is measured by a number nine times the first one taken. If the number of persons using each telephone should be taken into account, the increase would be much more rapid than indicated. While the actual demand never approaches the possible demand, it is certain to increase in greater ratio than by simple addition. The additional traffic means more work for operators and consequently more operators proportionately, and greater wear and consequently a higher maintenance charge for each line. As the size of the plant grows, the operators work under increasing physical difficulties, and with still greater growth the line connections get beyond the operator's length of arm, so that the separation of switchboards is necessary. The average maintenance charge is increased, not only by the wear, but by the existence of the additional central office equipment and the longer length of lines to be kept in repair and ultimately replaced. On a very large plant certain traffic, trunking, and transmission difficulties require large expenditures in their overcoming. Not only does the cost increase as outlined, but also does the value to the user increase. If the telephone charge were based on a unit of use, as in the ordinary business, then probably the telephone business would be more analagous to the ordinary business; although even such charge would not afford relief from the extra elements of construction and maintenance costs. Within certain limits the public gains more from the larger number of connections than it loses by paying an increased charge for line rental, if indeed the charge is not left stationary. The existence of limits to this enhanced value will be made the subject of further discussion.

Columbus as an Illustration.

Most of my illustrations will be chosen from the city of Columbus, Ohio, having a population within the exchange district of approximately 180,000. The Columbus telephone history and present situation are fairly typical. The Citizens Telephone Company began agitation for a franchise late in 1898, when the Central Union (Bell) Telephone Company had less than 1900 telephones, with rates near the business district as high as \$96 a year for business telephones and \$48 for residence telephones, and with additional charges for distance beyond one mile or more from the exchange.

The rates throughout the city today are respectively \$54 and \$27 a year for Bell main line business and residence telephones. By the time the Citizens plant was placed into paid operation in August, 1900, the Bell company had probably 4000 telephones. Within a year the Citizens Company had 5400. This was more than there had been reason to expect from the history of the business. At the present time each company has in the neighborhood of 12,000. Within this period the Citizens Company has abandoned its original switchboard, with a capacity of 5200 lines, because of its having been outgrown as well as fallen behind the progress of invention. The Bell company has recently abandoned its switchboard which was in operation in 1899. The Citizens Company's expenses showed a gradual increase per line as the plant grew. At the close of 1906 there were 7300 main-line telephones. The directors then considered an increase in the business rate of \$6 a year and in the residence rate of \$3 a year, besides the reduction of certain minor rates, and the installation of a two-party-line service at \$34 and \$18 a year. The reasons for this consideration were found not in any need for correcting past mistakes, but in the need of greater revenue to offset the increased expense per line and the then high cost level of copper and other material and of labor, and, of more importance, to take care of the prospective development at the increasing cost. In the judgment of the directors, there was and is greater public need for further development than for the continuance of the low rates. However, since that time there has been a saving to the company through the use of new automatic telephone equipment and the invention of cheaper means of adding to the plant. Accordingly the rates have been allowed to remain at the lower level.

Now the question is whether such changes in rates as were considered by the Citizens Company, and such as have been proposed or carried through by other Independent companies, are *unfortunate* to the extent implied in the report of the American Telephone and Telegraph Company. The public for more than six years had enjoyed the lower rates of the Citizens Company; and for these rates, it is fair to say, had received quite as many benefits as could have come from Bell telephones.

Public Savings From Low Rates.

A tabulation of the public saving is given below. The Central Union rates varied somewhat with grade of service and distance from the exchange, and were not uniformly maintained for all users, but it seems more than fair, for the purpose of comparison with the single-line, copper-metallic circuit, granular-carbon transmitter service of the Citizens Company, at \$40 and \$24 within the city limits, to use the \$72 and \$42 rates of the Bell company until their general reduction to \$54 and \$27 in 1905.

BUSINESS TELEPHONES AT \$40 A YEAR.

Average number in service	Telephones		Yearly Saving		Years		Total Savings
August 1 to December 1, 1900....	1968	×	\$32	×	5/12	=	\$ 26,240
Years 1901, 1902, 1903, 1904.....	2300	×	32	×	4	=	294,400
Year 1905	2456	×	14		1	=	34,384
Year 1906	2849	×	14		1	=	39,886
Total							\$394,910
Year 1907	2994	×	14		1	=	41,916
Total							\$436,826

RESIDENCE TELEPHONES AT \$24 A YEAR.

August 1 to December 31, 1900....	1616	×	\$18	×	5/12	=	\$ 12,120
Years 1901, 1902, 1903, 1904.....	2530	×	18	×	4	=	182,160
Year 1905	2455	×	3		1	=	7,365
Year 1906	3992	×	3		1	=	11,976
Total							\$213,621
Year 1907	4620	×	3		1	=	13,860
Total							\$227,481
Saving on both business and residence telephones to close of 1906.....							\$608,531
To close of 1907.....							664,307

From this it appears that if the competing telephone company had never come into existence and those persons who took the competing service had taken the service of the Bell company at the prices it was then charging on its exchange of 1900 telephones, they would have paid to the Bell company \$514,920 before that company reduced its rates. Since the reduction of the rates (which did not take effect with the beginning of 1905, although the table shows it for the whole year), there has been an additional saving, figured on the same basis, of \$149,387. It seems fair to assume that the primary cause of the reduction was the competition, and that in the absence of the competition the rates would have been increased rather than reduced, inasmuch as the Bell plant has increased sixfold.

Their Bearing on "Reconstruction."

On the basis of the present main-line subscribers of the Citizens Company, the difference between the rates now charged by the two companies means a saving to the subscribers of the Citizens Company of about \$60,000 a year. This sum, invested at six per cent, would amount in nineteen years to \$2,150,000, which is the present entire outstanding capitalization of the Citizens Company. In other words, if the Citizens Company would begin now to charge its present subscribers the rates charged by the Bell company and would invest the increase in its revenue at six per cent, it would have all the income it now has for maintenance, operation, general expenses, taxes, interest, dividends, and surplus, and in addition thereto, in the course of

nineteen years, would accumulate sufficient money to retire every dollar of its invested capital.

If the directors of the Citizens Company have erred in their rates to the extent implied by the Bell reports, then they have erred by the full amount of a generous "maintenance" or "reconstruction" account on top of all that they have applied to such an account. Something other than "maintenance" or "reconstruction," to all appearances, is needed to justify the original and present Columbus Bell rates.

Such Savings Equal to Duplication of Charges.

This amount, \$60,000, is about equal to the amount paid the Citizens Company for telephones duplicating Bell telephones. The community, as a whole, then, is suffering no loss from the existence of the Citizens service at its lower rates, if it be admitted that the Citizens service is worth the Bell prices. It is not necessary for this comparison to admit that the second telephone in an establishment is worth anything at all.

Other Benefits to the Public and the Companies.

Every telephone user is benefited more or less by the increase in the number of connections available on either system. The Citizens subscribers have the benefit of quick, easy, and interesting calling on the automatic system. The Bell company, by reason of having the automatic system as its competitor, has been able to improve its own service and lessen its expenses, because this automatic system has cut in half the demand for operators in Columbus, still leaving, however, the demand greater than the supply. As the growth of the city has necessitated the establishment of branch exchanges, this advantage for both companies is greatly augmented, since the automatic system permits the user to call to, from and through a branch exchange with no more effort than is involved in calling over centralized equipment, while the Bell company needs, for branch exchange calling, two or three operators in the circuit instead of one. Furthermore, the number of calls from and to places having both connections is lessened on the Bell system by so much as is handled over the Citizens system; this likewise lightens the load on the Bell operating force, quickening the service and reducing the cost.

Possible Objections.

If the figures used are correct, it seems that a good case is made in favor of telephone competition as affecting the public and the Independent investor. There appear to be these lines of possible refutation: that the Citizens Company is not properly maintaining its property or that it is not solvent; that its expectations from its automatic equipment cannot be

realized and its rates may yet need to be raised; or that the sound Columbus condition is not typical; and that in any case the Bell company has not profited by the competition. Rejoinders might be offered, that the sound condition of the Columbus Citizens property and finances and their likeness to those of other Independent telephone companies can be substantiated by any impartial investigation;¹ that in any event the difference between their present condition and one unquestionably sound could be overcome by a small advance in rates, much less than commensurate with the enhanced values; and that the Bell company has had a fair opportunity to get what profits it deserves.

The Central Union's Plight and Petition.

The Central Union Telephone Company's printed report for 1907² is almost a plea for help from the state on the score of poverty. Witness: "The Central Union Telephone Company has not been making returns on the investment for the past twelve years, and it cannot expect to make any return whatever until rates are raised." "We . . . should accept new ordinances with proper terms regulating the company and its rates, because when the public seeks to regulate, it must recognize the obligation to protect." The future appears to hold no prospects for this company except "to hold our position until the Independent fallacies . . . demonstrate themselves," and "to consolidate and unify the exchange systems whenever it can be done upon a basis of true values, i. e., actual investment³—until the field is clear." "Such unification of the systems," it is said "will result in the willingness on the part of the public to pay rates that will" be higher.

The question at issue, not only academically between the companies, but practically at times between the companies and the public or its legislative bodies, is whether the Independent movement, that is, telephone competition, is a fallacy, or the Bell monopolistic acts and purposes are fallacious.

¹It may be said that the Columbus situation is not truly typical of the village and rural conditions. The city telephone service, with the rural service immediately associated therewith, is, however, by far the most important. We cannot deal with the disassociated rural service without giving it much space of its own. Its real prosperity, I believe, is bound up with the existence of competing telephone interests in the cities.

²For its entire territory—most of Ohio and Indiana and part of Illinois, not including Cleveland, Cincinnati or Chicago.

³If the Central Union expenditures, in its efforts to achieve monopolistic control of the business, are treated as "investment," and if those efforts fail, then the true value of its property may prove to be less than the actual investment. The risks and the persistency of those who have prevented such monopolization are entitled to a representation in the value of their property whether represented in the investment or not. The value of the business of either, as measured by its service to the community, is inestimable.

An Outcome of Inexperience.

The directors of the Citizens Telephone Company, like the directors of many other Independent telephone companies, started into the business without experience and with little more knowledge than came from observation. They conceived the business to be an undeveloped one and by no means a necessary monopoly. They purchased their equipment in the open market. They sought to install the best that could be had. They ran the risk of failure in a comparatively untried field. They demonstrated that, with substantially the same form of equipment, a plant of more than three times the size of the Bell plant at the time of their starting could be operated and maintained at not much more than half the long-established Bell rates.

Bell Expenditures to Poor Purpose.

If the Bell company has not been equally successful, it has not been by reason of the competition taking away its business. Its business has grown in Columbus at about the same pace as the Citizens business. Its relative failure cannot be accounted for by me authoritatively or illustrated mathematically; but from observations and from common knowledge, it may be said that the Central Union Company has had two heavy sources of drain upon its revenue which the Independent companies have not. It has been obliged to pay tribute to the American Telephone and Telegraph Company for license to do business and to use telephone instruments, and has been obliged to buy some of the most expensive of its instruments and equipment from the Western Electric Company, controlled by the A. T. & T. Company, without the benefit of competitive prices.⁴ It has ever been trying to re-establish monopoly in the business, and in so doing has cut deeply into its revenues by discrimination in rates, by furnishing free service, by continuing telephones in service after the cessation of payments, by taking on subscribers of known inability to pay, and in other ways making a show of numbers beyond the productive subscription list.⁵ It has also, on occasion, made purchases at high prices of competing plants in the vain expectation of stopping competition. It has started the construction of plants and the soliciting of subscriptions at low rates rather with the idea of scaring Independent companies out of business than of completing the construction of a truly competitive service. It has an organized department endeavoring, by threat and persuasion, to break down the continuity of Independent exchanges and toll lines by monopolizing strategic points. It has spent much money in the

⁴The Western Electric Company, late in 1907, presumably under stress of competition, changed its selling plan so as to go into the competitive market with low prices. This may be with the expectation, by unprofitable underselling temporarily, of starving out the manufacturing competition.

⁵The general Bell policy in these particulars also appears to have been modified.

publication of articles and advertisements and in the circulation of papers and pamphlets designed to influence the public mind toward monopoly and to excite prejudice against its competitors.*

Is It Too Late To Mend?

If it be inquired what the Central Union Company may do to restore its shattered finances, the answer may be found, I judge, in the statement that if that company and its controlling organization, the American Telephone and Telegraph Company, will recognize that the telephone business is competitive and will turn into the channels of inventional and commercial development the money diverted to centralized profits and the endeavor to re-establish monopoly, then every portion of the Bell system may show both profits and progress.

Account Should Be Taken of the Smaller Users.

In the quotation from the A. T. & T. report appears this sentence: "If there are two systems, neither of them serving all, important users must be connected with both systems." Then the argument proceeds as though there is no distinction between important users and all users. It is true that if there are two systems of importance in a community, then important users must or should be connected with both.†

It is also true that such important users are getting their double telephone service very cheaply. The less important users, who number five times the duplicate users, get their service (which, so far as students of the telephone demand in Columbus can tell, is satisfactory and of all but complete value), more cheaply than if the community were served by a single system.

Division Means Saving.

To quote again: "Two exchange systems in the same community, each serving the same members, cannot be conceived of as a permanency, nor can the service in either be furnished at any material reduction because of

*It seems proper to comment that these criticisms of the Central Union Company, applicable to other Bell subsidiary companies, as well as to the parent A. T. & T. Company, are on a somewhat different footing than Bell criticism of Independent motives and actions. The Bell interests have an official control and official policies. The Independent companies, on the other hand, are very largely local and self-governing. They have certain common ties but no common control. We should not pretend that all the actions of all of their representatives have been admirable; but to make criticism of any unworthy actions apply to the Independent interests generally, it is needful to show that they have been adopted or approved generally.

†When a merchant complains that the growth of a second telephone system forces him to subscribe for a second telephone, it is very much the same as though he should complain that the gathering of a crowd in front of his store every morning forces the *opening of its doors* and the employment of salespeople to receive the customers.

the competition, if return on the investment and proper maintenance are taken into account. Duplication of plant is a waste to the investor. Duplication of charges is a waste to the user." The proper answer to the statement that service on either of two systems cannot be furnished at any material reduction because of competition, is simple denial. This is true as relating to the very small communities, and it may possibly be true as relating to such an extraordinarily large community as New York in the present state of the art, but for all the cities between the extremes, wherever the business is conducted efficiently and honestly, with a fair degree of development, service is cheaper on either of two systems than it would be on a single system of the size of both. Reasons for this are illustrated above as being inherent in the present nature of the business, as well as explained to some extent below. It is independent of the price-reducing effects of competition. It can be illustrated by public argument of the Bell company's representatives, if not deduced from the very report we are commenting upon.

It may be catching up careless wording, or it may be pointing out a saving phrase, to observe that the statement is that competitive service cannot be furnished at any *material* reduction. Whenever the public can get the results of competition upon human action with *any* reduction in the *necessary* costs it is making a two-way saving.

The Future Unpredictable.

It may be that two exchange systems in the same community, each serving the same members, cannot be conceived of as a permanency. It is a condition that has never actually been approached. The permanent condition of the telephone business is not yet to be conceived. The possibilities in different directions appear too great to permit any forecast of its ultimate condition.

The Smallness of Duplicate Charges.

As for the waste in the duplication of charges: In Columbus something like fifteen per cent of the telephones are duplicated. The bulk of these duplications are business telephones. Many of these duplicate users would have two or more telephones if there were but one system. Many others get benefits from their telephone service so far beyond its cost that the cost is in no sense a burden or a waste. The cost of a business telephone on the one plant is eleven cents a day, and on the other fifteen. If incoming or outgoing calls are worth on an average five cents apiece, then three a day will pay for the assumed wasteful duplicate charge.

The User Benefited by Development.

From the A. T. & T. report, is quoted: "The cost and value of the system to any subscriber do not depend so much on the number of communications had as on the number and extent of other circuits and facilities necessary to give the communications desired." If it be admitted that competition has been a moving cause in the multiplication and extension of circuits and facilities, then this points to an increase in the value of the systems from competition. Further remarks in the A. T. & T. report are to the effect that the cost or value cannot be exactly distributed. In this may be found a justification for the double charge for the residuum of duplicate users who do not get their share of value from the two systems. Their charges are among those inequitably distributed. In number and in amount of payments, however, they are of very much less importance than those who get their satisfactory restricted service on the single system at the low rate which the division of systems permits.

Are There Double Operating and Maintenance Expenses?

The operating expenses of a telephone exchange, such as the Bell's, are in small part organization and indirect labor costs, and in large part direct labor wages. The former, on the average, are increased by division—whether into separate systems or separate exchanges on the same system. The latter increase and diminish with the traffic on separate systems; but increase always with increased traffic on separate exchanges, with free interchange of calls, on the same system. There are two units affecting operation—the line unit and the call unit. As the number of lines increases on a single switchboard, a point is reached where the line connections cannot be brought within an arm's-length. The board must then be divided, and the calls "trunked" or transferred between the boards. This means almost double operating labor on such calls. The call unit is a single call—which is not at all comparable, for instance, with such a unit as a car-mile, since the car may carry, with the same crew, two passengers or two hundred. Does the number of calls double because of competition? On the contrary, an increase would come in both effective and ineffective calls from combination, particularly at the period of the peak-load. I have probably carried this analysis far enough to leave it with the statement that, with minor exceptions, operating expenses are lessened rather than doubled by telephone competition.

As to the maintenance expenses, it may be said that the relatively small organization and indirect labor costs may be somewhat increased by separation, and the direct labor wages sometimes also. The maintenance arising from traffic is smaller from competition; so, too, is that from separation of exchanges on the same system. As we shall see, there is not much extra plant cost from the separation of systems; but such as there is entails extra

maintenance expenses. To speak of double maintenance, however, is to give no heed to the conditions of the telephone business. The effect of competition in leading the management to the study of economy may be suggested.

The Smallness of Plant Duplication.

Concerning the investment waste from duplication of plant: If the duplication of telephones is fifteen per cent, the investment duplication is hardly as much as twenty. The most expensive elements of a telephone plant are individual for each subscriber. The largest single investment item is cable and line wire. Only the cable supports and, in part, the sheath are duplicated, and these only in the smaller sizes. The cable and line cost in a well-filled plant is not duplicated even in proportion to the duplicate telephones, because the duplications are mostly in the business districts nearest the exchange, where the cable units, by reason of short lengths and the most economical sizes, are cheapest, and where there may be very little use of line wires, and because the telephone duplications are not all on parallel lines.

Switchboards, if not connected, are cheaper separated than combined. If connected, then, if common battery it is said to be standard Bell practice, in the interest of economy, to separate them when they reach 9600 lines; and if magneto, their separation means little extra cost. On the whole, it is doubtful whether switchboard costs are duplicated beyond the proportion of line duplications, if as much.

Two pole lines may represent waste when they are parallel with no more of a load than could be borne on one. They may have no element of waste with a greater load, or when shared with other wire-using companies.*

*On the streets and alleys of Columbus are poles conveying wires of the following companies: The local Bell Company, the long-distance Bell Company; the local Independent Company, the long-distance Independent Company; the Western Union Telegraph Company, the Postal Telegraph Company, the American District Telegraph Company; the Columbus Railway & Light Company; the Columbus Public Service Company, with electric lighting and power circuits; the municipal light plant, the municipal fire-alarm and police telegraph system; and sundry electric traction companies. The long-distance telephone circuits of both companies are carried within the city almost entirely upon the poles of the local telephone companies. It is worthy of mention that the long-distance Bell Company, which controls the local Bell Company, has, outside the city, chosen to parallel local Bell pole lines in order, apparently, to reserve pole space for future circuits; and that Central Union pole lines in places parallel Central Union subway. The telegraph companies have several joint arrangements with one telephone company or the other for important pole lines through the city. The Citizens Telephone Company has a working arrangement with the municipal lighting plant for joint occupancy of poles in a large section of the city, and with the Railway & Light Company for joint occupancy of poles throughout the entire city. The Railway & Light Company has a joint pole line with the Postal Telegraph Company. The Bell Company and the Public Service Company exchange pole contracts. The fire-alarm and police and the district telegraph circuits are almost altogether on others' poles. There are other minor arrangements between these different companies; as, for example, with the electric railway companies. All of these arrangements go to reduce the number of poles in the city. It is a question whether, if the Bell and Citizens local telephone service should be combined, there would be any reduction in the number of poles required for the public utility companies.

At present prices two 35-foot pole lines cost no more than one 50-foot line.

Increasing the lead may require larger poles and more expensive guying and assist deterioration. Poles, which have probably been used more in the past than they will be in the future, are increasing in price, particularly those longer and heavier poles that a combined system would require.

Of the subway and conduit system only that smaller portion is waste which is represented by the costs of opening and repaving the streets, the manholes, and part of the digging, and perhaps by ducts carrying duplicate cable. Subways and manholes cannot always be combined economically, particularly when the system is of large size or in streets with many obstructions. Subway material, which will probably be used more in the future than in the past, has been decreasing in price.

The cost of interior wiring and instruments is duplicated only in proportion to the duplication of telephones. This duplication gives the users the benefits of simultaneous and alternative use.

The buildings may well be duplicated without waste, particularly as modern construction favors plenty of space, light and air.

All the engineering and overhead expenses are relatively small and probably contain little unnecessary duplication.

How Far Was Wasteful Duplication Preventable?

Waste may be defined as any departure from perfect economy. A protest against waste, however, is of no effect unless it can be shown that such waste is preventable. Waste which comes from not building large enough cannot be prevented unless the building of the future is foreseen in something like its proper quantity, form, place and time. If pole lines or subways or cable lines are built for less than their future load, then there is waste. If they are built for more than their future load, then there is waste. If their estimated future load comes too soon, so that a later period of construction means duplication, then there is waste. If such future load is too long in coming, then there is waste. If building is done now for the future with materials that will become cheaper in the future, then there may be waste. If today's form of construction becomes obsolete through the advance of the art, then there is waste. If expected development built for on a given route is never realized, then there is waste.

A striking feature of the telephone business, looking back over about one decade of competition and two decades of monopoly, has been its enormous development and the unexpectedness of such development. The Bell companies, in their period of monopoly, evidently proceeded on the theory of treating the telephone as a luxury, to be used by the few who could afford a high price. The Independent companies going into the field from 1895 to 1900 foresaw a greater development at a lower price and in their con-

struction provided for a great deal of new territory and a larger number of telephones in existing territory. However, they did not foresee any such demand as grew out of the lower prices, the improvement in service and the cumulative effect of the increasing number of connections. The history of the business has been one of inadequate facilities to meet the growing demand. Looking, with the knowledge of today, at telephone plants as they exist today, it is easy to point out a certain small proportion of wasteful duplication. Looking forward from ten or even five years ago, could many of these wasteful duplications have been prevented? Not many. Those who were building then had no such foresight as could have produced plants even as economical as existing plants.

The A. T. & T. report states that the urban "development keeps pace with the demand." This has not been the case uniformly with the two systems in Columbus, nor indeed in very many cities known to the writer. The values lost to the public by reason of inability to secure desired telephone service are beyond the range of calculation. They have been greatly lessened by the competitive condition.

Wastes on a Single Plant: Prospects of Saving.

Having the future in consideration, stress ought not to be laid upon the duplications and wastes of the past, but rather upon the wastes of the present, which the future may find ways to avoid. The telephone business as at present conducted is a wasteful business. Invention is making a fair start toward reducing these wastes. The cost of cable and lines on the ordinary telephone plant is very much greater than the cost of poles and subways. For each subscriber or for the number of subscribers on a party-line, there are two wires to the exchange. These wires are idle all of the time that the telephone is not in use, which means from ninety to ninety-nine per cent of the time. To reduce the number of cable pairs the Bell company in Columbus is placing two parties on a large number of its lines, this selection of two parties being made after experimenting with various numbers up to ten. To reduce the cable lengths the Bell company has established two branch exchanges designed to take care of large sections of the city, with trunking cable for the conveying of calls between the different exchanges and with extra operators for the handling of such trunking calls. The only saving by this process is in cable, against which are the charges for the duplicate grounds and buildings, some duplication of equipment, and some duplicate operating cost. The subscribers' cables, instead of converging to the main exchange, converge to the branch exchanges, with an element of waste in their length when they depart from a true line to that exchange through which they do their major business. With the branch exchanges laid out on a large scale, this departure from a truly economical line is great. The

Citizens Telephone Company is experimenting, with prospects of success, in the construction of branch exchanges of small units, whereby the maximum distance is traversed by trunking cable and the minimum by subscribers' cables. In these branches is the minimum equipment connecting with maximum common equipment at the main exchange. Operation through the branch exchanges involves no additional operating employes and no additional burden upon the subscriber, who is his own operator. There are fair prospects through further inventional progress of reducing the number of trunking wires below any proportion heretofore known, and of increasing the adaptability of existing cable plants beyond that of any plans heretofore known.

The idle cable growing out of imperfect distribution, which I have only hinted at, will ordinarily represent more cost than the duplicated subscribers' circuits in cable.

The new manual switchboard of the Bell company contains much duplication or multiplication which I will not take space to describe technically. Invention may yet devise means of lessening this item of investment and expense.

A wasteful condition on the ordinary switchboard results from the fluctuations in the traffic. The operators work at times under heavy pressure without keeping up with the demands upon them, and at other times are idle. Much has been done to equalize the traffic between operators, but there is still a large element of waste. Unnecessary duplication of operators is more wasteful than unnecessary duplication of poles.¹ At least one of the Independent manufacturers has almost ready for the market a method of equalizing the work of operators, which promises to reduce this form of waste. Others are engaged upon means to the same end.

It is no essential part of the argument that the equipment in use by the company chosen for illustration is superior in economy to the equipment generally in use by the Bell companies. The point is that the wastes and duplications that are made the premises for argument against competition have not only been in large degree unpreventable, but are really relatively minor. The competitive telephone manufacturers and engineers are working to reduce the larger wastes. All that I aim to contend is that there is some expectation of success. Even if of the endeavors to put the plants upon a more truly economical basis of construction, operation and maintenance, nine are failures and one a success, the work of the ten may well be worth all their costs.

¹One operator's wages at \$20 a month (not allowing for her supervision or her relief, or her equipment), will pay 6% interest and 6% maintenance and depreciation on five miles of 35-foot pole line, 6% and 2% on two miles of subway conduit, 6% and 4% on three-quarters of a mile of 100-pair cable.

Monopoly Not the Most Progressive.

If the telephone business has much to expect from invention and improvement, is such invention more likely to follow from a competitive than a monopolistic condition? Decidedly. A monopoly based upon franchise and organization has not the constantly pushing motive to improve its equipment and service. It will feel that it cannot afford to abandon existing equipment except for some important and large gain to itself from an improvement. Inventions seldom advance by such large steps. The monopoly may feel that the adoption of important improvements in one locality will need to be followed too rapidly in other localities, and hence will be slow to take the first step. Monopolistic interests, particularly if under any form of public control, cannot so well afford to experiment with new forms of equipment or service. The same objections are not generally offered to patent monopoly. The patent laws are designed to encourage invention and are to be judged by their general results. It is hardly once in a generation that they permit the monopolization of a fundamental principle of large public value completely without substitute.

The history of the business shows that the Bell companies have not always put their improvements at the command of the public except at prices out of proportion to their costs. For several years after the Citizens Company in Columbus was providing with all instruments the so-called long-distance transmitter (purchased in the market at \$1.75), the Central Union Company was charging an extra twelve dollars a year for service of the same grade as the Citizens service. Within a year in Detroit, i. e., since the opening of competition in that city, the Michigan Bell Telephone Company has been taking out many of the still remaining old-style Blake transmitters, and making an extra charge for the modern transmitters. It is common testimony of Independent manufacturers of telephone apparatus that many inventions, which have since proved their value, were ignored or bought cheaply and shelved in the days of monopoly. In Columbus I have been told of one instrument that hung on the same wall in an office without change in transmitter, receiver, or other permanent part, for eighteen years.

Other Arguments for Competition.

We have given much space to the matters of rates and of wastes. We have given the matters of prospective commercial and inventional development less attention than they deserve. In restricting comment upon the relative solvency or efficiency of the competing telephone interests, I feel that any real inquirer is able to investigate such questions impartially.

There was issued in February by the Ohio Independent Telephone

Association a pamphlet on telephone competition.* From this have been drawn some of the foregoing paragraphs. To this are referred readers who may be interested in Ohio telephone history and in pursuing other lines of argument against telephone monopoly. Among these are: The improvement brought about by competition, in multiplication and extension of lines and instruments, in service, in courtesy and its accompaniments, in equipment; the differentiation of the telephone business from gas, water, street railway, and other so-called "natural monopolies"; reasons for inability of combining local or long-distance companies to effect much saving; the unique and immense value of the telephone, which, with its irreplaceability, makes almost any price paid for it cheap and competition between systems particularly desirable; the specially valuable character of the existing competition between the large centralized interest and the many local interests; the citation of the threatened competition in the cities where it has not become actual; with answers to objections to the competitive condition and to assumptions of the practicability and economy of a unified telephone system.

Among the advantages of competition that would bear enlargement is the element of choice and alternative offered to the public. The moral effect of such choice is not only felt by the companies, but by the user also. The actual effect in case of the inability of either company to supply service in a given locality or in case of temporary or continued interruption of service on a line or an exchange (as from storm, fire, or strike), has been of great value.

Possibilities and Value of Public Control.

In the history of business of all sorts, competition has been the main reliance of the public against extortion or unfairness. It has proved its efficiency above any other working system, with only those exceptions that have been noted in late years in connection with such businesses as strongly tend toward monopoly. For dealing with such, two methods are proposed: Private ownership, with close governmental regulation or control; and governmental ownership. Ownership of the telephone properties by the state is not at all under consideration. We have left as alternatives, for the safeguarding of the public interests, telephone service under the condition of competition and under the condition of monopoly with state control. It is not supposed that the extreme is desirable in either case. The competitive condition involves certain state regulation, and the monopolistic condition involves some degree of freedom, with such small degree of competition as the telephone business has with other forms of public communication.

*Reprinted in part in the American Telephone Journal of April 4, 11, and 18, 1908.

No objection is offered to such measure of control as aims to prevent fraud, unjust charges, or arbitrary and unfair treatment of the public.

I think it proper to point out that the natural and best form of business is that which requires just as little supervision and imposes upon the state just as little as may be of burden, responsibility, and distraction from the state's own monopolistic duties; that such industrial freedom and competition have proved their efficiency in by far the great majority of business forms; and that to meet the exceptions, the practice of industrial regulation by the state is relatively experimental; and only to be entered upon conservatively, gradually, and when other means fail.

I think it can be shown conclusively, if it be necessary, that the telephone business is not of such nature as to be classed with necessary monopolies. It lacks the elements of exclusive occupancy of favored lands and of an increasing ratio of profits from an enlarged business. There seems at present no tendency toward monopoly save such as results from the purposeful efforts of one or the other of the competitors.

Is a Universal Service Worth Its Cost?

There is a peculiar argument in favor of telephone monopoly that may carry some weight. That is, that the purpose of telephone service, namely, quick communication between persons at different places, is defeated by just so much as they may be reached only by a different system than the one available to the persons desiring connection. Answers to this are found in an analysis of the condition under which telephone service is desired and paid for. There are two primary classes of telephone users: Those whose chief needs are met with a local system, with which are connected city protective departments, the physician, the place of employment, the regular grocer, the larger stores, and certain friends; and those who have need for a system which approaches "universality." No one can measure precisely these respective demands. To all appearances the first class is the larger numerically, pays the larger amount in the aggregate, would lose more by a small advance in the rates and gain more by rate reduction. This class, seemingly, has the least to gain from increasing numbers on the exchange, although it may be said that it is only because of the general extension of the service that some of the particular connections desired by the individual are included in the list. It is also this extension that makes the price relatively less and less for the duplicate users. Those persons who need regularly only one system pay less than if they had all the connections of both systems. For them to get the use of the other system occasionally is seldom much burden or expense. Telephone rates at present (except in the largest cities) are based upon average uses. The subscriber pays so much for his opportunities, and bears his share of the general expense of the company, whether he uses his instrument

TELEPHONE COMPETITION HAS

- Multiplied telephones
- Lowered rates
- Improved service
- Produced inventions
- Supplied villages
- Connected farms
- Ramified toll lines
- Enhanced telephone values
- Enhanced business and land values

TELEPHONE COMPETITION HAS NOT

- Divided any service that ever existed
- Increased cost in equal ratio with utility
- Wasted much that the future won't use

TELEPHONE COMPETITION IS NEEDED

- To watch the companies
- To give the public a choice
- To continue the growth
- To encourage invention
- To develop the possibilities of the business

TELEPHONE COMBINATION IS NOT NEEDED

- To conserve investments
- To effect savings
- To provide public opportunities that cannot be had more cheaply